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PRINCIPAL INVESTIGATOR: Thomas W. Rowe, RN

CONTRACTING ORGANIZATION: North Shore – Long Island Jewish Health System
Great Neck, New York 11021-5502

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Introduction

Following the tragic events of September 11, 2001, bioterrorism has come to the forefront of national concern. In addition, according to a recent warning from the RAND Corporation,¹ the country is under-prepared for a pandemic outbreak that could potentially claim upwards of two million U.S. lives. RAND's report determined that the use of technology to improve communications and pandemic surveillance is a worthwhile investment, as it allows for early detection of the pandemic, which sets the stage for a timely regional response.

Until 2007, the North Shore-LIJ Health System utilized a manual surveillance system to detect and investigate disease outbreaks. This system proved to be time-consuming for the Infection Control Staff, causing delays in the implementation of appropriate infection control measures. Utilizing the financial support granted by USAMRIID, the Health System developed a project to design and implement an electronic, regional infectious disease syndromic surveillance system. The system, which utilizes Theradoc® and FirstWatch® software, compares chief complaint data from emergency departments, hospital admissions and emergency medical services, and laboratory data from hospital and community-based laboratories to established floor and ceiling benchmarks to allow for disease trending and response triggers. As a benchmark is reached, whether it is through a single sentinel event (e.g. a physician ordered an Anthrax culture) or the number of patients with similar chief complaints surpasses the ceiling benchmark (e.g. a rise in patients presenting to emergency departments with abdominal pain), the system automatically alerts the Infectious Disease and Emergency Management staff via email, page, and text message, allowing the Infectious Disease staff to initiate appropriate infection control measures to prevent the spread of infection, and warning the Emergency Management Division of the potential need to initiate a response (e.g. mass distribution of prophylaxis, establishment of alternate care sites, etc...).

The research goal of the project was to measure the importance of timely notifications of potential infectious disease outbreaks, provided by the electronic syndromic surveillance system, compared to the manual case-review system, and to demonstrate that early warning of infectious agents allows for quicker implementation of the Health System's bioterrorism/infectious disease response program. The manual system has routinely failed to provide the infection control staff with proper notification of a patient's infectious status—on at least one occasion, notification to the infection control staff was delayed over 48 hours. We hypothesized that the ability to electronically monitor chief complaint and laboratory data would decrease the notification time from the high-end measure of 48 hours to within four minutes of the patient's chief complaint data or laboratory test order entered into the computer system (this timeframe was hypothesized because FirstWatch® refreshes and analyzes the data every four minutes), thereby reducing the incidence of hospital acquired infections, lowering morbidity and mortality, and initiating an expedited community response through actions such as contact investigations, risk communication, prophylaxis, quarantine, and enhanced patient surge capacity.

Please note: this report will be lacking empirical data to support the research outcomes of our project. A delay in the implementation of the Theradoc® software, due to contractual issues, has

impeded our ability to establish a single database to collect the chief complaint and laboratory data, which is essential to allow FirstWatch® to provide the notifications. The contractual issues have been resolved, and we are currently in the process of implementing the system. Theradoc® was recently installed at one facility, North Shore University Hospital; therefore, limited data exists, which will be utilized for the purposes of this report. The software will be installed at the five remaining facilities that are participating in this project in the coming weeks. Our Grant Officer Representative, Al Graziano, has been continually informed of the obstacles that we have faced with the implementation of this system. In addition, a grant extension has been applied for and is currently pending.

Body of Work

The North Shore-Long Island Jewish (LIJ) Health System is the third largest, secular non-profit healthcare network in the United States, comprised of fifteen hospitals, three long term care facilities, three trauma centers, six home health agencies, and more than 80 state licensed ambulatory facilities. Serving the 5.2 million people of Long Island, and the Boroughs of Queens and Staten Island in New York City, the North Shore-Long Island Jewish Health System strives to provide an unparalleled spectrum of services in the region.

The North Shore-LIJ Emergency Management Division oversees all disaster preparedness and security activities for the Health System. In concert with partners from numerous regional government and private agencies, including police, fire, public health, emergency management, emergency medical services, and private businesses, the Division strives to reduce the loss of life and property, and protect our institutions from natural, technological, and man-made hazards. The Division supports the region and its own facilities with the development and maintenance of a comprehensive program that addresses mitigation, preparedness, response, and recovery initiatives.

Phase 1

To better prepare for and respond to infectious disease outbreaks, the North Shore-LIJ Health System utilized the financial support granted by USAMRIID to design and implement an electronic, regional infectious disease syndromic surveillance system and to enhance its notification and response capabilities. During the first phase of this project, the project staff developed a multi-disciplinary surveillance committee comprised of individuals from the Health System's Emergency Management Division, including registered nurses, pre-hospital care providers, and former law enforcement personnel. Also represented on the Surveillance Committee are members of the Health System's Infectious Disease, Information Technology, Micro Division of Laboratory Services, and Emergency Medical Services divisions, as well as regional partners from the Nassau County and New York State Health Departments. During this phase, the committee completed the following tasks:

- Determined the IT requirements for the surveillance system and the response program, including communications/dispatch upgrades and incident management software.
- Discussed the types of reports that the surveillance system will need to generate to meet the needs of the infectious disease staff, which is tasked with monitoring hospital acquired infections and community-acquired diseases, some of which are mandatory to report to the local and state health departments.
- Reviewed the Health System's current Bioterrorism/SARS plan and determined the format for modifying the plan to encompass all biological agents that have the potential to produce outbreak. A work plan and timeframe for completing the new Comprehensive Biological Contingency Response Guidebook was established.

Please note: in the initial statement of work, we proposed to have USAMRIID travel to New York to train the Health System's clinicians, laboratory staff, and first responders in bioterrorism

and emerging infectious diseases. To prepare for the educational curriculum, the surveillance committee was to conduct a needs assessment during Phase I; however, the training program was cancelled by our Grant Officer and the funds were allocated to other project initiatives.

Phase II

The primary focus of Phase II involved the development of a Health System-wide database from which the FirstWatch® program pulls the chief complaint and laboratory data to compare to the established triggers and generate automated alerts. The project staff anticipated this to be the greatest challenge in the formation of the surveillance system, as the five Health System facilities that are participating in this project utilize multiple different applications for admitting, emergency department registration, laboratory ordering and reporting, and EMS call intake. To assist with the establishment of the database, the project staff initially chose Technology Solutions Partners, LLC based upon their demonstrated merit and strong reputation in the information technology and emergency service fields. However, as the details of the work involved to create this database emerged, the timeframe and costs increased, causing the project staff to investigate alternate vendors who can provide a similar service.

Following an extensive search, the surveillance committee determined that the subcontractor best suited to meet the system's needs is Theradoc®, a clinical informatics company that develops and implements real-time electronic surveillance systems. Due to its ability to read free-text, Theradoc® has the capability to leverage all of the clinical data systems available at each participating facility into one database. The system provides continuous infection surveillance and intelligence alerts prompting timely clinical and infection control interventions. Nationwide, hospitals struggle to manage hospital-acquired and community-acquired infections. The Theradoc® program will aid each hospital in their day-to-day management and tracking of infections, such as MRSA, not just the identification of agents of bioterrorism. Furthermore, with all of the data housed in the Theradoc® database, FirstWatch® will be able to extract the data to provide disease trending alerts and automated notification to pre-identified Health System personnel to initiate the response.

To initiate the vendor switch, the project staff applied for and was granted a budget modification. In addition to solidifying the database vendor, the project staff and surveillance committee continued to update the disease-specific appendices of the Comprehensive Biological Contingency Guidebook, and ordered the Information Technology and response equipment during Phase II.

Phase III

Much of the equipment and supplies that were purchased for the project arrived and were installed during Phase III, an overview of which can be found below.

Communications Equipment

To allow the Health System's emergency managers to obtain optimal situational awareness during an incident, computer upgrades, memory upgrades, radio upgrades, dispatch system upgrades, satellite telephones, and new monitoring screens were installed in the Health System's Emergency Operations Center. Furthermore, ETEAM, an incident management software program was installed at the network level to allow all Health System computers to access the program during an incident to receive real-time, updated information about the incident and each hospital's status. With the ability to analyze the situation in real-time, ETEAM provides a platform for the incident command staff located at each facility to communicate amongst themselves as well as with the Health System's Emergency Operations Center. The information entered by all players in the emergency allows emergency management personnel to sort, prioritize, and visualize the volumes of critical data that pour into the command center during an emergency. ETEAM offers the following features: incident reporting and tracking, tip reporting, hazard modeling, resource management, action planning, alert notification, and ESRI-enabled geographic information systems (GIS) mapping. During Phase III, all Emergency Management staff received training on ETEAM and began to utilize it daily to familiarize themselves with the program. The project staff is currently conducting training sessions at each participating facility to familiarize key staff members with the software.

Response Equipment

Response equipment that was ordered for this project included a Raman Spectrometer, which can identify chemical weapons, explosives, toxic chemicals, narcotics, and other substances in approximately 15 seconds; a biological sample identifier; and radiation pagers. All of the response equipment has been received and the Emergency Management staff has been trained in its use.

Training

During Phase III, the Health System began to provide training for clinical and emergency management staff on bioterrorism and other emerging infectious diseases utilizing the patient simulator purchased with the support of this grant. Furthermore, to prepare hospital staff for potential radiological and chemical emergencies, the Emergency Management Division hosted courses in its training center including HAZMAT for Healthcare and WMD

Radiological/Nuclear Awareness and Operations, taught free of charge by instructors from Bechtel Nevada's Counterterrorism Operations Support Division.

Surveillance Software and Supporting Hardware

Although the decision to utilize Theradoc® software was made prior to the end of Phase II, the program was unable to go live during Phase III because the contract between the Company and the Health System was not finalized and signed until November 2006. All of the hardware to support the Theradoc® program was ordered and installed at the Health System's data center in Westbury, NY prior to the end of Phase III, with the intention of going live during Phase IV.

The Business Associate Agreement and Contract with FirstWatch® was signed during Phase III, and all of the supporting hardware and servers for the program were installed at the Health System's data center during Phase III. EMS call volume was immediately imported and

analyzed by FirstWatch® due to the ease of interfaces between the two programs. The additional data (laboratory data, registration data, and chief complaint data) could not be analyzed by FirstWatch® during Phase III because of the delayed Theradoc® contract; thus the central data repository for FirstWatch® to pull its data from did not exist.

Furthermore, during Phase III, the surveillance committee completed the updated Comprehensive Biological Contingency Response Guidebook, comprised of a Biological Response Plan, and nine disease-specific appendices (Avian Influenza, Pandemic Influenza, SARS, Anthrax, Botulism, Plague, Smallpox, Tularemia, and Viral Hemorrhagic Fevers). Each appendix contains a case definition, fact sheet, treatment guidelines, prophylaxis guidelines, and laboratory guidelines. A copy of the Comprehensive Biological Contingency Response Guidebook was distributed to all Health System facilities, as well as the local department of health, other local hospitals, and the Grant Officer Representative for this project.

Phase IV

In the original statement of work for this project, the project staff outlined the tasks for Phase IV, which included:

- Incorporating all of the data from the six hospitals' laboratory, registration, and EMS applications into the central data repository;
- Programming the FirstWatch® system to read from the central data repository (Theradoc®);
- Establishing syndrome baseline triggers (Supporting Data, Table 1); and
- Exercising the system.

As described above, due to the delayed Theradoc® contract, it was not possible to establish the entire Theradoc® database by the end of Phase IV, thereby delaying the full implementation of the FirstWatch® system. By the end of Phase IV, the project staff was able to interface North Shore University Hospital's registration system with Theradoc®, which allowed the FirstWatch® system to begin to analyze the data from one hospital and the Health System's EMS call volume. An example of the data analysis for February 14, 2007 can be found in Table 2 of the Supporting Data section of this report. The project staff believes that, once fully operational, the FirstWatch® reports will provide disease incidence ratios, as well as a geographical mapping of syndromes to determine community clusters. This information will be utilized to identify appropriate prevention and intervention methods.

As of May 2007, the project staff was still working to develop the Theradoc® system at the remaining five facilities, following which, the FirstWatch® system is prepared to begin to immediately extract and analyze the data. At that time, the project staff will test the system by injecting simulated outbreak data that is consistent with exposure to a Category A agent. The performance of the syndromic surveillance system and the North Shore- LIJ Comprehensive Biological Contingency Response Guidebook will be evaluated to determine the timeliness between the exposure, symptom onset, presentation at healthcare facility, data acquisition, abnormal disease pattern recognition, automated alert generation, and initiation of the public health response. The time-to-notification and time-to-initiation of the Infection Control and

Emergency Management response will be evaluated and compared with the current baseline of 48 hours. Once the exercise has been completed, the Guidebook will be modified based on the lessons learned from the exercise.

Key Research Accomplishments

As described in the introduction, this report is lacking empirical research data because of a considerable contractual issue that prevented the installation and implementation of a major component of the project, the Theradoc® system. Without this system in place, it has not been possible to collect data. The contractual issues have been resolved, and the Theradoc® system is operational at North Shore University Hospital, with the intention of bringing the remaining five facilities on-line within the next eight weeks. At that time, the syndromic surveillance system, and North Shore-LIJ's response to a simulated event will be tested, the results of which will be forwarded to USAMRIID for review.

Please note: the project staff has applied for an additional year of support for this program. The details for the proposed future work can be found in the conclusion of this report.

Reportable Outcomes

To date, the support and equipment provided by this award has allowed the project staff to set the stage for a state of the art electronic surveillance system that will not only identify community outbreak clusters, but will also allow the North Shore-LIJ Health System to monitor hospital-acquired infections. The greatest challenge to achieving real-time disease surveillance has involved the development of a central data repository from which the surveillance application can analyze the data and provide automated disease alerts to the infectious disease and emergency management staff. This challenge has been overcome through the development of the Theradoc® database, which will be completed at all six participating facilities in the coming weeks.

Furthermore, the project staff has developed a Comprehensive Biological Contingency Response Guidebook, to assist healthcare facilities with the identification, isolation, prevention, and treatment of biological agents. This book was reproduced and widely distributed to all North Shore-LIJ Health System facilities, all hospitals in Nassau County, NY, the New York State Health Department, and the Grant Officer Representative for this project to utilize as a reference for planning and response purposes.

Conclusion

North Shore-LIJ Health System is currently in Phase V of an eight-phase project to develop and implement a real-time, regional, electronic infectious disease surveillance program. The funding support for this project has allowed for the purchase and installation of software to monitor infectious diseases throughout the Health System, as well as real-time notification of pre-set triggers of an actual or potential incident (recognition), real-time notification of appropriate personnel, training programs for clinical and emergency management staff. The tasks accomplished during each phase are detailed below.

The program has been implemented in the following phases:

Phase One

- Emergency Management staff developed a multi-disciplinary surveillance committee with representation from Infectious Diseases, Information Technology, Micro Division of Laboratory Services, Emergency Medical Services, and Emergency Management.
- Project staff determined IT requirements for the surveillance system and disease reporting.
- The committee reviewed the current North Shore-LIJ bioterrorism/infectious disease response plan and notification platforms.

Phase Two

- Project staff conducted and completed a search for a technology vendor that can leverage all of the clinical data systems that are available at each of the participating hospitals into one central database.
- Project staff ordered the information technology required to support the platform and notification processes.
- Project staff ordered regional response equipment to support the response to potential events.
- Surveillance committee updated the Comprehensive Biological Contingency Response Guidebook.

Phase Three

- Information Technology equipment to support FirstWatch® and Theradoc® arrived and was installed.
- Installation of communication/notification module for E-Team; Emergency Management staff received ETEAM training and began the process of introducing the program to staff at each facility.
- Emergency Management staff received training in the use of the Raman Spectrometer, GI 135 Identifier, and the Radiation Pagers; response equipment was incorporated into HAZMAT and radiation training courses.
- Clinical staff received bioterrorism and infectious disease training, utilizing the Health System's patient simulator.
- Health System signed the Business Associate Agreement and Contract with FirstWatch®.
- EMS call volume was interfaced with the FirstWatch® system.

- Surveillance Committee completed the Biological Contingency Response Guidebook, and distributed it to healthcare facilities, regional partners, and the Grant Officer Representative for this project.

Phase Four

- Surveillance committee established ICD-9 codes that the system will monitor.
- North Shore University Hospital's registration data was interfaced with the Theradoc® system, allowing FirstWatch to analyze and report disease trends from the hospital and EMS call volume.
- Education was provided to North Shore-LIJ staff regarding the Comprehensive Biological Contingency Response Guidebook, the including selection of appropriate PPE, doffing and donning of PPE, and clinical management of patients.
- Project staff continued to work to incorporate all remaining data applications into the Theradoc® system.

The tasks that will be completed over the coming months to complete the surveillance system and to strengthen the Health System and the overall region's ability to respond to a biological outbreak is outlined below.

Phase Five

- The North Shore-LIJ surveillance program and response plan will be exercised to test the time-to-notification and the time-to-initiation of the response.
- The North Shore-LIJ Comprehensive Biological Contingency Response Guidebook will be reviewed and revised based on the After Action Report from the exercise designed to test the hypothesis.
- Triggers and notifications will be reviewed for appropriateness.

Phase Six

- Triggers and notifications will be reviewed for appropriateness.
- North Shore-LIJ staff will be re-educated on the Comprehensive Biological Contingency Response Guidebook.
- North Shore-LIJ employees will be monitored for compliance on the selection and appropriate use of Personal Protective Equipment.

Phase Seven

- North Shore-LIJ Health System will educate First Responders and other healthcare partners (local Department of Health, Skilled Nursing Facilities, HomeCare, Hospice, etc) on the Comprehensive Biological Contingency Response Guidebook.
- North Shore-LIJ Health System will educate First Responders and other healthcare partners (local Department of Health, Skilled Nursing Facilities, HomeCare, Hospice, etc) on the selection, use, and doffing/donning of appropriate PPE during an infectious disease outbreak.

Phase Eight

- North Shore-LIJ Health System, in collaboration with its healthcare partners, will conduct a regional exercise to test the region's ability to recognize, make appropriate notification of, and respond to a large-scale infectious disease outbreak.

References

- ¹ Fauntleroy G: RAND warns of pandemic underpreparedness, Government Health IT (Accessed 2 May 2007). Available: <http://www.govhealthit.com/article102525-04-20-07-Web>

Supporting Data

Table 1.

North Shore-LIJ Health System Network Emergency Management Syndromic Surveillance – ICD 9 Codes

Syndrome Group	ICD9	ICD9 Description	Syndrome Subgroup
COMA	780.01	COMA	Coma
COMA	798	DEATH, SUDDEN, CAUSE UNKN	Death
COMA	798.1	DEATH, INSTANTANEOUS	Death
COMA	798.2	DEATH, LESS THAN 24 HRS O	Death
COMA	798.9	DEATH, UNATTENDED	Death
COMA	799.1	ARREST, RESPIRATORY	Resp Arrest
COMA	785.5	SHOCK W/O MENTION OF TRAU	Shock
COMA	785.50	SHOCK NOS	Shock
COMA	785.59	SHOCK W/O TRAUMA NEC	Shock
COMA	780.2	SYNCOPE AND COLLAPSE	Syncope
DERMHEM	782.7	ECCHYMOSES, SPONTANEOUS	Ecchymoses
DERMHEM	287.8	HEMORRHAGIC CONDITION NEC	Hemorrhagic Condition
DERMHEM	287.9	HEMORRHAGIC CONDITION NOS	Hemorrhagic Condition
DERMHEM	287	PURPURA AND HEMORRHAGIC C	Purpura
DERMHEM	287.2	PURPURA NOS	Purpura
DERMHEM	287.1	THROMBOCYTOPATHY	Thrombocytopenia
DERMHEM	287.3	THROMBOCYTOPENIA, PRIMARY	Thrombocytopenia
DERMHEM	287.4	THROMBOCYTOPENIA, SECONDA	Thrombocytopenia
DERMHEM	287.5	THROMBOCYTOPENIA NOS	Thrombocytopenia
DERMINF	057.0	ERYTHEMA INFECTIOSUM	Erythema Infectiosum
DERMINF	057	EXANTHEMATA, OTHER VIRAL	Exanthemata
DERMINF	057.8	EXANTHEMATA, VIRAL NEC	Exanthemata
DERMINF	057.9	EXANTHEMATA, VIRAL NOS	Exanthemata
DERMINF	051	COWPOX AND PARAVACCINIA	Other pox
DERMINF	051.0	COWPOX	Other pox
DERMINF	051.1	PSEUDOCOWPOX	Other pox
DERMINF	051.9	PARAVACCINIA NOS	Other pox
DERMINF	051.2	DERMATITIS, CONTAGIOUS PUSTULAR	Pustular dermatitis
DERMINF	050	SMALLPOX	Smallpox
DERMINF	050.0	SMALLPOX, VARIOLA MAJOR	Smallpox
DERMINF	050.1	SMALLPOX, ALASTRIM	Smallpox
DERMINF	050.2	SMALLPOX, MODIFIED	Smallpox
DERMINF	050.9	SMALLPOX NOS	Smallpox
DERMINF	052	CHICKENPOX	Varicella
DERMINF	052.7	VARICELLA COMPLICATION NEC	Varicella
DERMINF	052.8	VARICELLA COMPLICATION NOS	Varicella
DERMINF	052.9	VARICELLA UNCOMPLICATED	Varicella
FEVER	780.31	CONVULSION, FEBRILE	Febrile Convulsion
FEVER	780.6	FEVER	Fever
FEVER	002.1	FEVER, PARATYPHOID A	Paratyphoid Fever
FEVER	002.2	FEVER, PARATYPHOID B	Paratyphoid Fever
FEVER	002.3	FEVER, PARATYPHOID C	Paratyphoid Fever
FEVER	002.9	FEVER, PARATYPHOID NOS	Paratyphoid Fever
FEVER	034.1	SCARLET FEVER	Scarlet Fever
FEVER	003.1	SEPTICEMIA, SALMONELLA	Septicemia
FEVER	038	SEPTICEMIA	Septicemia

FEVER	038.0	SEPTICEMIA, STREPTOCOCCAL	Septicemia
FEVER	038.1	SEPTICEMIA, STAPHYLOCOCCA	Septicemia
FEVER	038.10	SEPTICEMIA, STAPHYLOCOCCA	Septicemia
FEVER	038.11	SEPTICEMIA, STAPHYLOCOCCA	Septicemia
FEVER	038.19	SEPTICEMIA, STAPHYLOCOCCA	Septicemia
FEVER	038.2	SEPTICEMIA, PNEUMOCOCCAL	Septicemia
FEVER	038.3	SEPTICEMIA, ANAEROBIC	Septicemia
FEVER	038.4	SEPTICEMIA D/T OTH GRAM-N	Septicemia
FEVER	038.40	SEPTICEMIA, GRAM-NEG ORGA	Septicemia
FEVER	038.41	SEPTICEMIA, HEMOPHILUS IN	Septicemia
FEVER	038.42	SEPTICEMIA, E. COLI	Septicemia
FEVER	038.43	SEPTICEMIA, PSEUDOMONAS	Septicemia
FEVER	038.44	SEPTICEMIA, SERRATIA	Septicemia
FEVER	038.49	SEPTICEMIA, GRAM-NEG ORGA	Septicemia
FEVER	038.8	SEPTICEMIA NEC	Septicemia
FEVER	002	TYPHOID AND PARATYPHOID F	Typhoid Fever
FEVER	002.0	FEVER, TYPHOID	Typhoid Fever
GI	008.43	ENTERITIS, CAMPYLOBACTER	Campylobacter
GI	001	CHOLERA	Cholera
GI	001.0	CHOLERA D/T VIBRIO CHOLER	Cholera
GI	001.1	CHOLERA D/T VIBRIO CHOLER	Cholera
GI	001.9	CHOLERA NOS	Cholera
GI	008.0	ENTERITIS D/T E. COLI	E coli
GI	008.00	ENTERITIS, E. COLI NOS	E coli
GI	008.01	ENTERITIS, ENTEROPATHOGEN	E coli
GI	008.02	ENTERITIS, ENTEROTOXIGENI	E coli
GI	008.03	ENTERITIS, ENTEROINVASIVE	E coli
GI	008.04	ENTERITIS, ENTEROHEMORRHA	E coli
GI	008.09	ENTERITIS, E. COLI NEC	E coli
GI	008	INFCT, INTESTINAL D/T OTH	Enteritis
GI	008.1	ENTERITIS, ARIZONA GROUP	Enteritis
GI	008.2	ENTERITIS, AEROBACTER AER	Enteritis
GI	008.3	ENTERITIS, PROTEUS	Enteritis
GI	008.4	ENTERITIS D/T OTHER BACTE	Enteritis
GI	008.41	ENTERITIS, STAPHYLOCOCCUS	Enteritis
GI	008.42	ENTERITIS, PSEUDOMONAS	Enteritis
GI	008.44	ENTERITIS, YERSINIA ENTER	Enteritis
GI	008.45	ENTERITIS, CLOSTRIDIUM DI	Enteritis
GI	008.46	ENTERITIS, ANAEROBIC NEC	Enteritis
GI	008.47	ENTERITIS, GRAM-NEGATIVE	Enteritis
GI	008.49	ENTERITIS, BACTERIAL NEC	Enteritis
GI	008.5	ENTERITIS, BACTERIAL NOS	Enteritis
GI	008.6	ENTERITIS D/T SPECIFIED V	Enteritis
GI	008.61	ENTERITIS D/T ROTAVIRUS	Enteritis
GI	008.61	ENTERITIS D/T ROTAVIRUS	Enteritis
GI	008.62	ENTERITIS D/T ADENOVIRUS	Enteritis
GI	008.63	ENTERITIS D/T NORWALK VIR	Enteritis
GI	008.64	ENTERITIS D/T SMALL ROUND	Enteritis
GI	008.65	ENTERITIS D/T CALCIVIRUS	Enteritis
GI	008.66	ENTERITIS D/T ASTROVIRUS	Enteritis
GI	008.67	ENTERITIS D/T ENTEROVIRUS	Enteritis
GI	008.69	ENTERITIS D/T VIRUS NEC	Enteritis
GI	008.8	ENTERITIS, VIRAL NOS	Enteritis
GI	009	INFECTIONS, ILL-DEFINED I	Enteritis
GI	009.0	ENTERITIS, INFECTIOUS NOS	Enteritis

GI	009.1	ENTERITIS PRESUMED INFCT	Enteritis
GI	009.2	DIARRHEA, INFECTIOUS	Enteritis
GI	009.3	DIARRHEA, PRESUMED INFCT	Enteritis
GI	535.6	DUODENITIS	Enteritis
GI	535.60	DUODENITIS W/O HEMORRHAGE	Enteritis
GI	535.61	DUODENITIS W/HEMORRHAGE	Enteritis
GI	555	ENTERITIS, REGIONAL	Enteritis
GI	555.0	ENTERITIS, REGIONAL SMALL INTESTINE	Enteritis
GI	555.1	ENTERITIS, REGIONAL LARGE INTESTINE	Enteritis
GI	555.2	ENTERITIS, REGIONAL BOTH INTESTINES	Enteritis
GI	555.9	ENTERITIS, REGIONAL NOS	Enteritis
GI	787.91	DIARRHEA NOS	Enteritis
GI	787.3	FLATULENCE/ERUCTATION/GAS PAIN	Flatulence
GI	005	POISONING, FOOD, OTHER (B	Food poisoning
GI	005.0	POISONING, FOOD, STAPHYLO	Food poisoning
GI	005.2	POIS, FOOD, D/T C. PERFRI	Food poisoning
GI	005.3	POIS, FOOD, D/T CLOSTRIDI	Food poisoning
GI	005.4	POIS, FOOD, D/T V. PARAHA	Food poisoning
GI	005.8	POISONING, FOOD, OTHER BA	Food poisoning
GI	005.81	POIS, FOOD, D/T VIBRIO VU	Food poisoning
GI	005.89	POISONING, FOOD, BACTERIA	Food poisoning
GI	005.9	POISONING, FOOD NOS	Food poisoning
GI	535	GASTRITIS AND DUODENITIS	Gastritis
GI	535.0	GASTRITIS, ACUTE	Gastritis
GI	535.00	GASTRITIS, ACUTE W/O HEMO	Gastritis
GI	535.01	GASTRITIS, ACUTE W/HEMORR	Gastritis
GI	535.4	GASTRITIS NEC	Gastritis
GI	535.40	GASTRITIS NEC W/O HEMORRH	Gastritis
GI	535.41	GASTRITIS NEC W/HEMORRHAG	Gastritis
GI	535.5	GASTRITIS/GASTRODUODENITI	Gastritis
GI	535.50	GASTRITIS NOS W/O HEMORRH	Gastritis
GI	535.51	GASTRITIS NOS W/HEMORRHAG	Gastritis
GI	536.2	VOMITING, PERSISTENT	Gastritis
GI	787.0	NAUSEA AND VOMITING	Gastritis
GI	787.01	NAUSEA WITH VOMITING	Gastritis
GI	787.02	NAUSEA ALONE	Gastritis
GI	787.03	VOMITING ALONE	Gastritis
GI	558.2	GASTROENTERITIS/COLITIS,	Gastroenteritis
GI	558.9	GASTROENTERITIS, NONINFCT	Gastroenteritis
GI	127	HELMINTHIASES, OTHER INTE	Helminth infection
GI	127.7	HELMINTHIASIS, INTESTINAL	Helminth infection
GI	127.8	HELMINTHIASIS, MIXED INTE	Helminth infection
GI	127.9	INTESTINAL HELMINTHIASIS	Helminth infection
GI	128	HELMINTHIASIS, OTHER & UN	Helminth infection
GI	128.8	HELMINTHIASIS INFECTION N	Helminth infection
GI	128.9	HELMINTHIASIS INFECTION N	Helminth infection
GI	129	INTESTINAL PARASITISM NOS	Helminth infection
GI	578.0	HEMATEMESIS	Hematemesis
GI	569.89	DISORDER, INTESTINAL NEC	Intestinal disorder
GI	569.9	DISORDER, INTESTINAL NOS	Intestinal disorder
GI	787	SYMPTOMS INVOLVING DIGEST	Intestinal disorder
GI	787.99	SYMPTOMS INV DIGESTIVE SY	Intestinal disorder
GI	006	AMEBIASIS	Protozoan infection
GI	006.0	AMEBIASIS, ACUTE, W/O AB	Protozoan infection
GI	006.1	AMEBIASIS, CHRONIC, W/O A	Protozoan infection

GI	006.2	COLITIS, AMEBIC NONDYSENT	Protozoan infection
GI	006.8	INFECTION, AMEBIC NEC	Protozoan infection
GI	006.9	AMEBIASIS NOS	Protozoan infection
GI	007	DISEASE, OTHER PROTOZOAL	Protozoan infection
GI	007.0	BALANTIDIASIS	Protozoan infection
GI	007.1	GIARDIASIS	Protozoan infection
GI	007.2	COCCIDIOSIS	Protozoan infection
GI	007.3	TRICHOMONIASIS, INTESTINA	Protozoan infection
GI	007.4	CRYPTOSPORIDIOSIS	Protozoan infection
GI	007.8	DISEASE, PROTOZOAL INTEST	Protozoan infection
GI	007.9	DISEASE, PROTOZOAL INTEST	Protozoan infection
GI	003	INFECTIONS, OTHER SALMONELLA	Salmonella
GI	003.0	GASTROENTERITIS, SALMONELLA	Salmonella
GI	003.2	INFECTIONS, LOCALIZED SAL	Salmonella
GI	003.20	INFECTION, LOCALIZED SALMONELLA	Salmonella
GI	003.29	INFECTION, LOCALIZED SALMONELLA	Salmonella
GI	003.8	INFECTION, SALMONELLA NEC	Salmonella
GI	003.9	INFECTION, SALMONELLA NOS	Salmonella
GI	004	SHIGELLOSIS	Shigella
GI	004.0	DYSENTERY, SHIGELLA DYSEN	Shigella
GI	004.1	DYSENTERY, SHIGELLA FLEXNER	Shigella
GI	004.2	DYSENTERY, SHIGELLA BOYDI	Shigella
GI	004.3	DYSENTERY, SHIGELLA SONNE	Shigella
GI	004.8	INFECTION, SHIGELLA NEC	Shigella
GI	004.9	SHIGELLOSIS NOS	Shigella
NEURO	005.1	BOTULISM	Botulism
NEURO	293.0	DELIRIUM, ACUTE	Delirium
NEURO	293.1	DELIRIUM, SUBACUTE	Delirium
NEURO	036.1	ENCEPHALITIS, MENINGOCOCCUS	Encephalitis
NEURO	049.8	ENCEPHALITIS, VIRAL NEC	Encephalitis
NEURO	049.9	ENCEPHALITIS, VIRAL NOS	Encephalitis
NEURO	062	ENCEPHALITIS, VIRAL, MOSQUITO	Encephalitis
NEURO	062.0	ENCEPHALITIS, JAPANESE	Encephalitis
NEURO	062.1	ENCEPHALITIS, WESTERN EQUINE	Encephalitis
NEURO	062.2	ENCEPHALITIS, EASTERN EQUINE	Encephalitis
NEURO	062.3	ENCEPHALITIS, ST. LOUIS	Encephalitis
NEURO	062.4	ENCEPHALITIS, AUSTRALIAN	Encephalitis
NEURO	062.5	ENCEPHALITIS, CALIFORNIA	Encephalitis
NEURO	062.8	ENCEPHALITIS, MOSQUITO-BORNE	Encephalitis
NEURO	062.9	ENCEPHALITIS, MOSQUITO-BORNE	Encephalitis
NEURO	063	ENCEPHALITIS, VIRAL, TICK	Encephalitis
NEURO	063.0	ENCEPHALITIS, RUSSIAN SPRING	Encephalitis
NEURO	063.1	LOUPELLE ILL	Encephalitis
NEURO	063.2	ENCEPHALITIS, CENTRAL EUROPE	Encephalitis
NEURO	063.8	ENCEPHALITIS, VIRAL, TICK	Encephalitis
NEURO	063.9	ENCEPHALITIS, TICK-BORNE	Encephalitis
NEURO	064	ENCEPHALITIS ARTHROPOD-BORNE	Encephalitis
NEURO	323	ENCEPHALITIS & (ENCEPHALOPATHY)	Encephalitis
NEURO	323.0	ENCEPHALITIS IN VIRAL DISEASE	Encephalitis
NEURO	323.1	ENCEPHALITIS IN RICKETTSIAL	Encephalitis
NEURO	323.2	ENCEPHALITIS IN PROTOZOAL	Encephalitis
NEURO	323.4	ENCEPHALITIS, OTHER D/T INF	Encephalitis
NEURO	323.5	ENCEPHALITIS, POSTIMMUNIZATION	Encephalitis
NEURO	323.6	ENCEPHALITIS, POSTINFECTION	Encephalitis
NEURO	323.7	ENCEPHALITIS, TOXIC	Encephalitis

NEURO	323.8	ENCEPHALITIS NEC	Encephalitis
NEURO	323.9	ENCEPHALITIS NOS	Encephalitis
NEURO	348.3	ENCEPHALOPATHY NOS	Encephalitis
NEURO	003.21	MENINGITIS, SALMONELLA	Meningitis
NEURO	036.0	MENINGITIS, MENINGOCOCCAL	Meningitis
NEURO	047.0	MENINGITIS D/T COXSACKIE	Meningitis
NEURO	047.1	MENINGITIS D/T ECHO VIRUS	Meningitis
NEURO	047.8	MENINGITIS, VIRAL NEC	Meningitis
NEURO	047.9	MENINGITIS, VIRAL NOS	Meningitis
NEURO	048	DISEASE, ENTEROVIRAL OF C	Meningitis
NEURO	049	DISEASE, OTH N-ARTHPD VIR	Meningitis
NEURO	049.0	CHORIOMENINGITIS, LYMPHOC	Meningitis
NEURO	049.1	MENINGITIS, ADENOVIRUS	Meningitis
NEURO	320	MENINGITIS, BACTERIAL	Meningitis
NEURO	320.0	MENINGITIS, HEMOPHILUS	Meningitis
NEURO	320.1	MENINGITIS, PNEUMOCOCCAL	Meningitis
NEURO	320.2	MENINGITIS, STREPTOCOCCAL	Meningitis
NEURO	320.3	MENINGITIS, STAPHYLOCOCCA	Meningitis
NEURO	320.7	MENG, IN OTH BCTRL DISEAS	Meningitis
NEURO	320.8	MENINGITIS D/T OTHER SPEC	Meningitis
NEURO	320.81	MENINGITIS, D/T ANAEROBIC	Meningitis
NEURO	320.82	MENG, D/T GRAM-NEGATIVE B	Meningitis
NEURO	320.89	MENINGITIS, D/T OTHER SPE	Meningitis
NEURO	320.9	MENINGITIS, D/T BACTERIA	Meningitis
NEURO	321	MENINGITIS D/T OTHER ORGA	Meningitis
NEURO	321.0	MENINGITIS, CRYPTOCCAL	Meningitis
NEURO	321.1	MENINGITIS IN OTHER FUNGA	Meningitis
NEURO	321.2	MENINGITIS D/T VIRAL DISE	Meningitis
NEURO	321.3	MENINGITIS D/T TRYPANOSOM	Meningitis
NEURO	321.8	MENG D/T OTH NONBACT ORGA	Meningitis
NEURO	322	MENINGITIS, UNSPECIFIED C	Meningitis
NEURO	322.0	MENINGITIS, NONPYOGENIC	Meningitis
NEURO	322.1	MENINGITIS, EOSINOPHILIC	Meningitis
NEURO	322.9	MENINGITIS NOS	Meningitis
NEURO	781.6	MENINGISMUS	Meningitis
NEURO	036	INFECTION, MENINGOCOCCAL	N. men Infection
NEURO	036.2	MENINGOCOCCEMIA	N. men Infection
NEURO	036.89	INFECTION, MENINGOCOCCAL	N. men Infection
NEURO	036.9	INFECTION, MENINGOCOCCAL	N. men Infection
NEURO	344	SYNDROME, OTHER PARALYTIC	Paralysis
NEURO	344.8	SYNDROMES, PARALYTIC, OTH	Paralysis
NEURO	344.89	SYNDROME, PARALYTIC, NEC	Paralysis
RESP	466	BRONCHITIS AND BRONCHIOLI	Bronchitis
RESP	466.0	BRONCHITIS, ACUTE	Bronchitis
RESP	466.1	BRONCHIOLITIS, ACUTE	Bronchitis
RESP	466.11	BRONCHIOLITIS, ACUTE, D/T	Bronchitis
RESP	466.19	BRONCHIO ACUTE D/T OTH IN	Bronchitis
RESP	490	BRONCHITIS NOS	Bronchitis
RESP	494	BRONCHIECTASIS	Bronchitis
RESP	786.2	COUGH	Cough
RESP	032	DIPHtheria	Diphtheria
RESP	032.1	DIPHtheria, NASOPHARYNGEA	Diphtheria
RESP	032.2	DIPHtheria, ANTERIOR NASA	Diphtheria
RESP	032.3	DIPHtheria, LARYNGEAL	Diphtheria
RESP	032.8	DIPHtheria, OTHER SPECIFI	Diphtheria

RESP	032.89	DIPHThERIA NEC	Diphtheria
RESP	032.9	DIPHThERIA NOS	Diphtheria
RESP	478	DISEASE, OTHER UPPER RESP	Disease upper resp
RESP	478.29	DISEASE, PHARYNX NEC	Disease upper resp
RESP	478.7	DISEASE, LARYNX NEC	Disease upper resp
RESP	478.70	DISEASE, LARYNX NOS	Disease upper resp
RESP	478.79	DISEASE, LARYNX NEC	Disease upper resp
RESP	478.9	DISEASE, UPPER RESPIRATOR	Disease upper resp
RESP	114.5	COCCIDIOIDOMYCOSIS, PULMO	Fungal infection
RESP	114.9	COCCIDIOIDOMYCOSIS NOS	Fungal infection
RESP	115.05	HISTOPLASMA CAPSULATUM PN	Fungal infection
RESP	115.09	HISTOPLASMA CAPSULATUM NE	Fungal infection
RESP	115.10	HISTOPLASMA DUBOISII NOS	Fungal infection
RESP	115.15	HISTOPLASMA DUBOISII PNEU	Fungal infection
RESP	115.90	HISTOPLASMOSIS NOS	Fungal infection
RESP	115.99	HISTOPLASMOSIS NOS	Fungal infection
RESP	116.0	BLASTOMYCOSIS	Fungal infection
RESP	117.1	SPOROTRICHOSIS	Fungal infection
RESP	117.2	CHROMOBLASTOMYCOSIS	Fungal infection
RESP	117.3	ASPERGILLOSIS	Fungal infection
RESP	117.5	CRYPTOCOCCOSIS	Fungal infection
RESP	117.8	INFECTION BY DEMATIACIOUS	Fungal infection
RESP	130	TOXOPLASMOSIS	Fungal infection
RESP	130.4	PNEUMONITIS, TOXOPLASMOSI	Fungal infection
RESP	130.7	TOXOPLASMOSIS, SITE NEC	Fungal infection
RESP	130.9	TOXOPLASMOSIS NOS	Fungal infection
RESP	786.3	HEMOPTYSIS	Hemoptysis
RESP	487	INFLUENZA	Influenza
RESP	487.0	INFLUENZA W/PNEUMONIA	Influenza
RESP	487.1	INFLUENZA W/RSPT MNFST N	Influenza
RESP	487.8	INFLUENZA W/MANIFESTATION	Influenza
RESP	519.3	DISEASE, MEDIASTINUM NEC	Mediastinal disease
RESP	031	DISEASES, D/T OTHER MYCOB	Mycobacterial Disease
RESP	031.0	DISEASE, PULMONARY D/T MY	Mycobacterial Disease
RESP	031.8	DISEASE, MYCOBACTERIAL NE	Mycobacterial Disease
RESP	031.9	DISEASE, MYCOBACTERIAL NO	Mycobacterial Disease
RESP	506	COND, RSPRT D/T CHEM FUME	Other resp
RESP	506.0	BRONCH/PNEU D/T CHEM FUME	Other resp
RESP	506.2	INFLAMMATION, UP RSPRT D/	Other resp
RESP	506.3	CND, ACUTE RSPRT NEC D/T	Other resp
RESP	506.4	CND, CHRN RSPRT D/T CHEMI	Other resp
RESP	506.9	CND, RSPRT NEC D/T CHEMI	Other resp
RESP	508.8	CND, RSPRT D/T OTH SPC EX	Other resp
RESP	508.9	CND, RSPRT D/T EXTRN AGEN	Other resp
RESP	518.0	COLLAPSE, PULMONARY	Other resp
RESP	786.00	ABNORMALITY, RESPIRATORY	Other resp
RESP	786.4	ABNORMAL SPUTUM	Other resp
RESP	786.52	PAINFUL RESPIRATION	Other resp
RESP	055.2	OTITIS MEDIA, POSTMEASLES	Otitis Media
RESP	381.0	OTITIS MEDIA, ACUTE NONSUPPURATIVE	Otitis Media
RESP	381.00	OM, ACUTE NONSUPPURATIVE NOS	Otitis Media
RESP	381.01	OM, ACUTE SEROUS	Otitis Media
RESP	381.02	OM, acute mucoid	Otitis Media
RESP	381.03	OM, ACUTE SANGUINOUS	Otitis Media
RESP	381.5	SALPINGITIS, EUSTACHIAN NOS	Otitis Media

RESP	381.50	SALPINGITIS, ACUTE EUSTACHIAN	Otitis Media
RESP	381.51	Salpingitis, acute Eustachian	Otitis Media
RESP	382	OM, SUPPURATIVE & UNSPECIFIED	Otitis Media
RESP	382.0	OM, ACUTE SUPPURATIVE NOS	Otitis Media
RESP	382.00	OM, ACUTE SUPPURATIVE W/DRUM RUP	Otitis Media
RESP	382.01	OM, ACUTE SUPPURATIVE IN DISEASE CE	Otitis Media
RESP	382.02	OM, ACUTE SUPPURATIVE	Otitis Media
RESP	382.4	OTITIS SUPPRATIVE NOS	Otitis Media
RESP	382.9	OTITIS MEDIA NOS	Otitis Media
RESP	003.22	PNEUMONIA, SALMONELLA	Pneumonia
RESP	480	PNEUMONIA, VIRAL	Pneumonia
RESP	480.0	PNEUMONIA, ADENOVIRUS	Pneumonia
RESP	480.1	PNEUMONIA D/T RSPRT SYNCY	Pneumonia
RESP	480.2	PNEUMONIA D/T PARAINFLUEN	Pneumonia
RESP	480.8	PNEUMONIA D/T VIRUS NEC	Pneumonia
RESP	480.9	PNEUMONIA D/T VIRUS NOS	Pneumonia
RESP	481	PNEUMONIA D/T PNEUMOCOCCA	Pneumonia
RESP	482	PNEUMONIA, OTHER BACTERIA	Pneumonia
RESP	482.0	PNEUMONIA D/T KLEBSIELLA	Pneumonia
RESP	482.1	PNEUMONIA D/T PSEUDOMONAS	Pneumonia
RESP	482.2	PNEUMONIA D/T HEMOPHILUS	Pneumonia
RESP	482.3	PNEUMONIA D/T STREPTOCOCC	Pneumonia
RESP	482.30	PNEUMONIA D/T STREPTOCOCC	Pneumonia
RESP	482.31	PNEUMONIA D/T STREPTOCOCC	Pneumonia
RESP	482.32	PNEUMONIA D/T STREPTOCOCC	Pneumonia
RESP	482.39	PNEUMONIA D/T STREPTOCOCC	Pneumonia
RESP	482.4	PNEUMONIA D/T STAPHYLOCOC	Pneumonia
RESP	482.40	PNEUNONIA D/T STAPHYLOCOC	Pneumonia
RESP	482.41	PNEUMONIA D/T STAPHYLOCOC	Pneumonia
RESP	482.49	PNEUMONIA D/T STAPHYLOCOC	Pneumonia
RESP	482.8	PNEUMONIA D/T OTHER BACTE	Pneumonia
RESP	482.81	PNEUMONIA D/T ANAEROBES	Pneumonia
RESP	482.82	PNEUMONIA D/T ESCHERICHIA	Pneumonia
RESP	482.83	PNEUMONIA D/T GRAM-NEGATI	Pneumonia
RESP	482.84	PNEUMONIA D/T LEGIONNAIRE	Pneumonia
RESP	482.89	PNEUMONIA, BACTERIAL NEC	Pneumonia
RESP	482.9	PNEUMONIA, BACTERIAL NOS	Pneumonia
RESP	483	PNEUMONIA D/T OTHER ORGAN	Pneumonia
RESP	483.0	PNEUMONIA D/T MYCOPLASMA	Pneumonia
RESP	483.1	PNEUMONIA D/T CHLAMYDIA	Pneumonia
RESP	483.8	PNEUMONIA D/T ORGANISM NE	Pneumonia
RESP	484	PNEUMONIA IN INFECTIOUS D	Pneumonia
RESP	484.1	PNEUMONIA IN CYTOMEGALIC	Pneumonia
RESP	484.3	PNEUMONIA IN WHOOPING COU	Pneumonia
RESP	484.5	PNEUMONIA IN ANTHRAX	Pneumonia
RESP	484.6	PNEUMONIA IN ASPERGILLOSI	Pneumonia
RESP	484.7	PNEUMONIA IN SYSTEMIC MYC	Pneumonia
RESP	484.8	PNEUMONIA IN OTH INFCT DI	Pneumonia
RESP	485	BRONCHOPNEUMONIA, ORGANIS	Pneumonia
RESP	486	PNEUMONIA, ORGANISM NOS	Pneumonia
RESP	506.1	EDEMA, ACUTE PULMONARY D/	Pulmonary edema
RESP	518.4	EDEMA, ACUTE LUNG NOS	Pulmonary edema
RESP	518.81	FAILURE, ACUTE RESPIRATOR	Respiratory failure
RESP	518.82	INSUFFICIENCY, PULMONARY	Respiratory failure
RESP	518.84	RESPIRATORY FAILURE, ACUTE	Respiratory failure

RESP	786.0	ABNORMALITY, DYSPNEA & RE	Shortness of breath
RESP	786.05	SHORTNESS OF BREATH	Shortness of breath
RESP	461	SINUSITIS, ACUTE	Sinusitis
RESP	461.0	SINUSITIS, ACUTE MAXILLARY	Sinusitis
RESP	461.1	SINUSITIS, ACUTE FRONTAL	Sinusitis
RESP	461.2	SINUSITIS, ACUTE ETHMOIDAL	Sinusitis
RESP	461.3	SINUSITIS, ACUTE SPHENOIDAL	Sinusitis
RESP	461.8	SINUSITIS, ACUTE NEC	Sinusitis
RESP	461.9	SINUSITIS, ACUTE NOS	Sinusitis
RESP	034	SORE THROAT/SCARLET FEVER	Sore throat
RESP	034.0	SORE THROAT, STREPTOCOCCA	Sore throat
RESP	784.1	PAIN, THROAT	Sore throat
RESP	786.06	TACHYPNEA	Tachypnea
RESP	460	NASOPHARYNGITIS, ACUTE	URI
RESP	462	PHARYNGITIS, ACUTE	URI
RESP	463	TONSILLITIS, ACUTE	URI
RESP	464	LARYNGITIS AND TRACHEITIS	URI
RESP	464.0	LARYNGITIS, ACUTE	URI
RESP	464.1	TRACHEITIS, ACUTE	URI
RESP	464.10	TRACHEITIS, ACUTE, W/O OB	URI
RESP	464.11	TRACHEITIS, ACUTE W/OBSTR	URI
RESP	464.2	LARYNGOTRACHEITIS, ACUTE	URI
RESP	464.20	LARYNGOTRACHEITIS, ACUTE	URI
RESP	464.21	LARYNGOTRACHEITIS, ACUTE	URI
RESP	464.3	EPIGLOTTITIS, ACUTE	URI
RESP	464.30	EPIGLOTTITIS, ACUTE W/O O	URI
RESP	464.31	EPIGLOTTITIS, ACUTE W/OBS	URI
RESP	464.4	CROUP	URI
RESP	465	INFCT, UP RSPRT, MLT SITE	URI
RESP	465.0	LARYNGOPHARYNGITIS, ACUTE	URI
RESP	465.8	INFCT UP RSPRT MLT SITES,	URI
RESP	465.9	INFCT UP RSPRT MLT SITES,	URI
RESP	074	DISEASES D/T COXSACKIE VI	Viral infection
RESP	074.8	COXSACKIE VIRUS NEC	Viral infection
RESP	079.0	INFECTION, ADENOVIRUS	Viral infection
RESP	079.1	INFECTION, ECHO VIRUS	Viral infection
RESP	079.2	INFECTION, COXSACKIE VIRU	Viral infection
RESP	079.3	INFECTION, RHINOVIRUS	Viral infection
RESP	079.6	INFCT, RESPIRATORY SYNCYT	Viral infection
RESP	079.81	INFECTION, HANTAVIRUS	Viral infection
RESP	079.88	INFECTION, CHLAMYDIAL NEC	Viral infection
RESP	079.89	INFECTION, VIRAL NEC	Viral infection
RESP	079.9	INFECTION, VIRAL/CHLAMYDI	Viral infection
RESP	079.98	INFECTION, CHLAMYDIAL NOS	Viral infection
RESP	079.99	INFECTION, VIRAL NOS	Viral infection
RESP	786.07	WHEEZING	Wheezing/Stridor
RESP	786.1	STRIDOR	Wheezing/Stridor
RESP	033	WHOOPING COUGH	Whooping cough
RESP	033.0	WHOOPCOUGH, BORDETELLA PE	Whooping cough
RESP	033.1	WHOOPCOUGH BORDETELLA PAR	Whooping cough
RESP	033.8	WHOOPING COUGH NEC	Whooping cough
RESP	033.9	WHOOPING COUGH NOS	Whooping cough

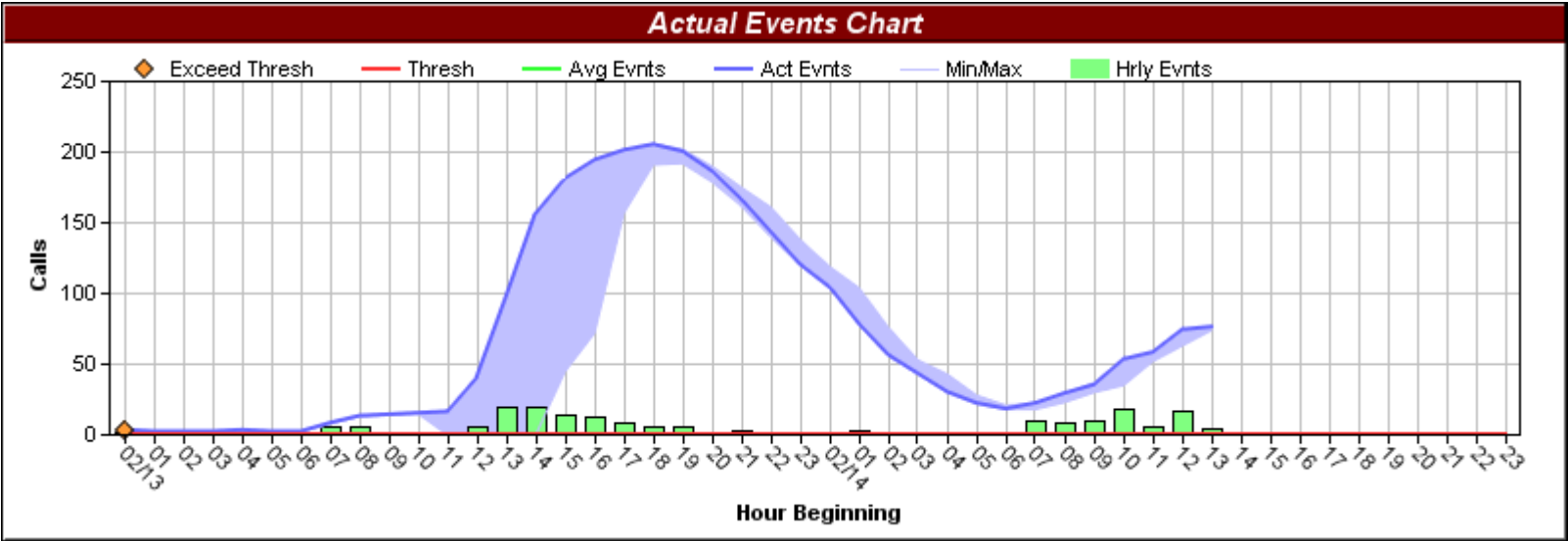
Table 2. First Watch Surveillance Report

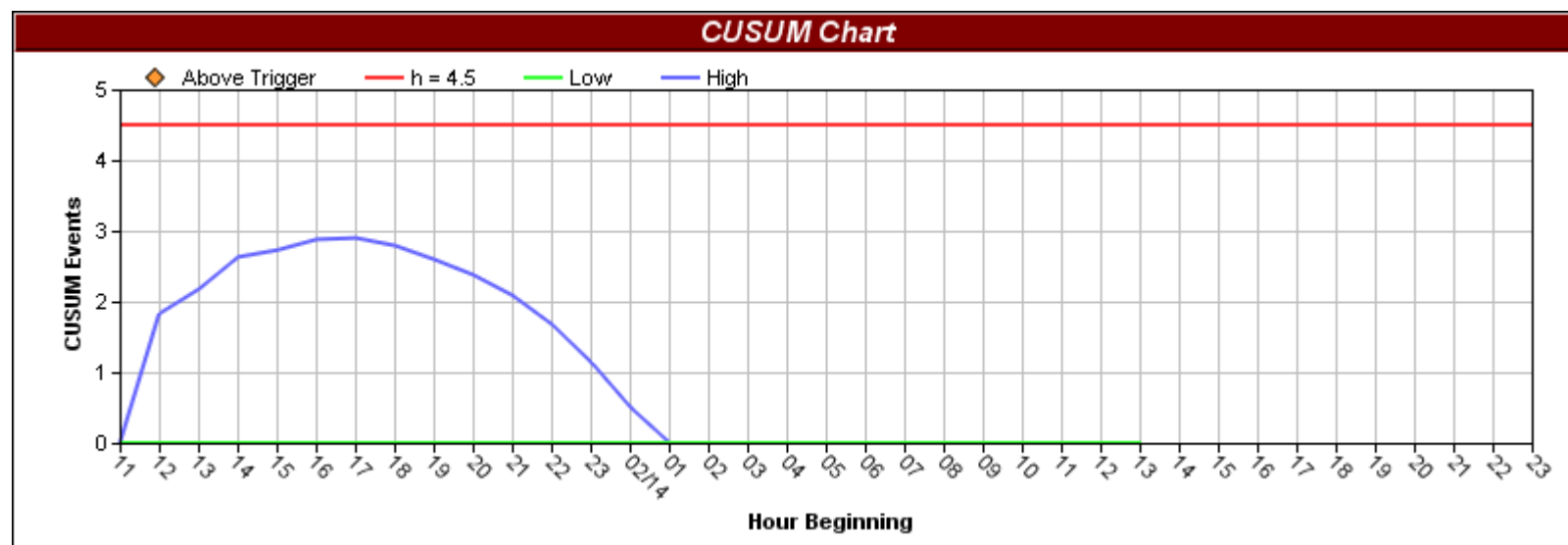
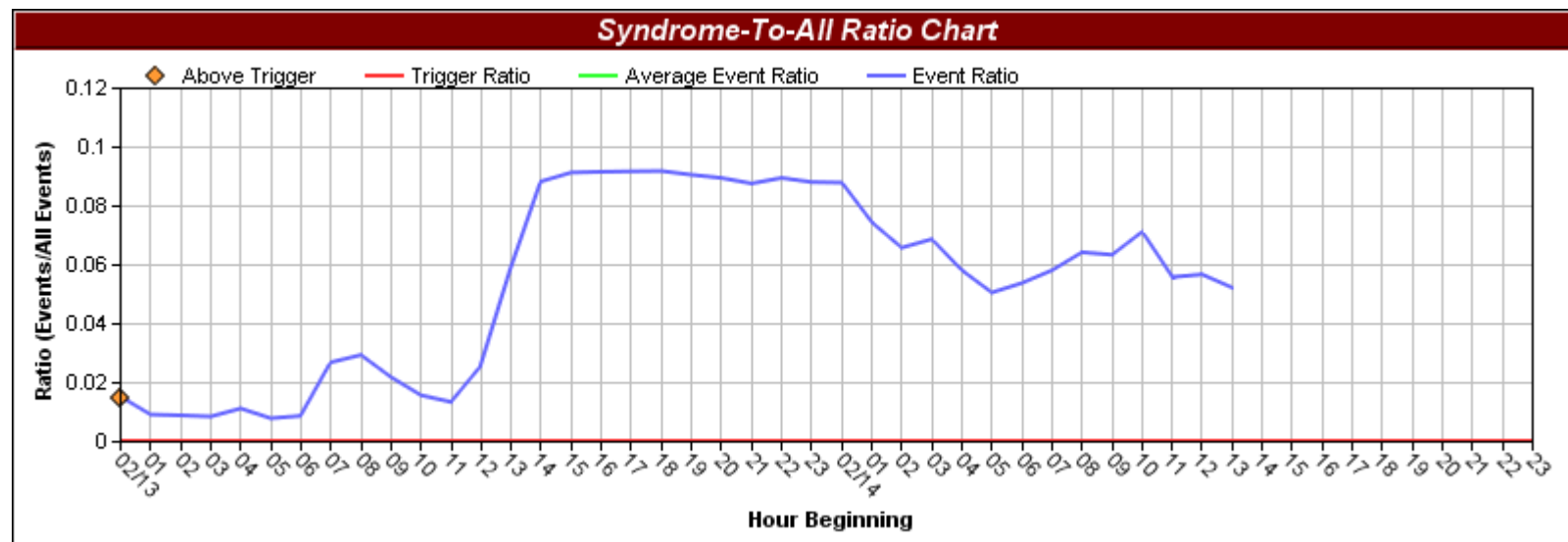


NSLIJ Hospital - Biosurveillance (free-text) GraphIt Summary

Graphs represent in queue, active or completed calls between the hours of 2/14/2007 1:35:17 AM and 2/14/2007 1:35:17 PM

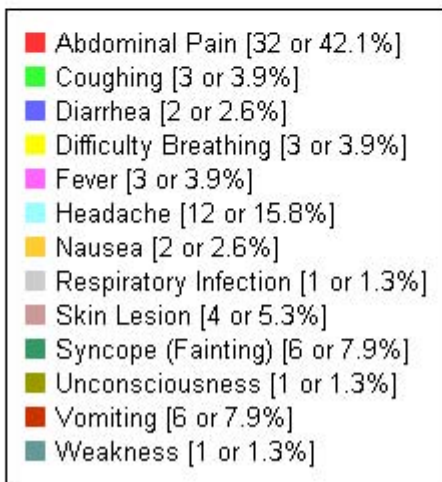
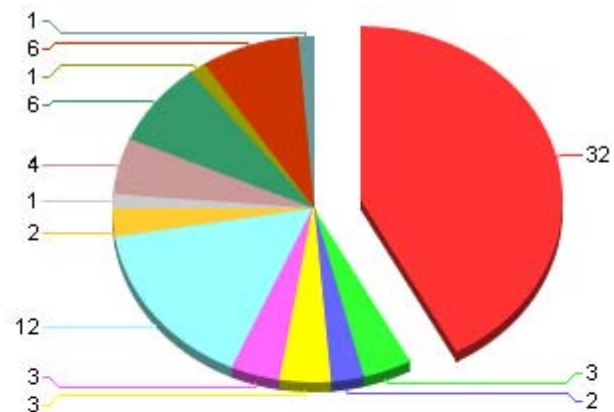
Line Chart:





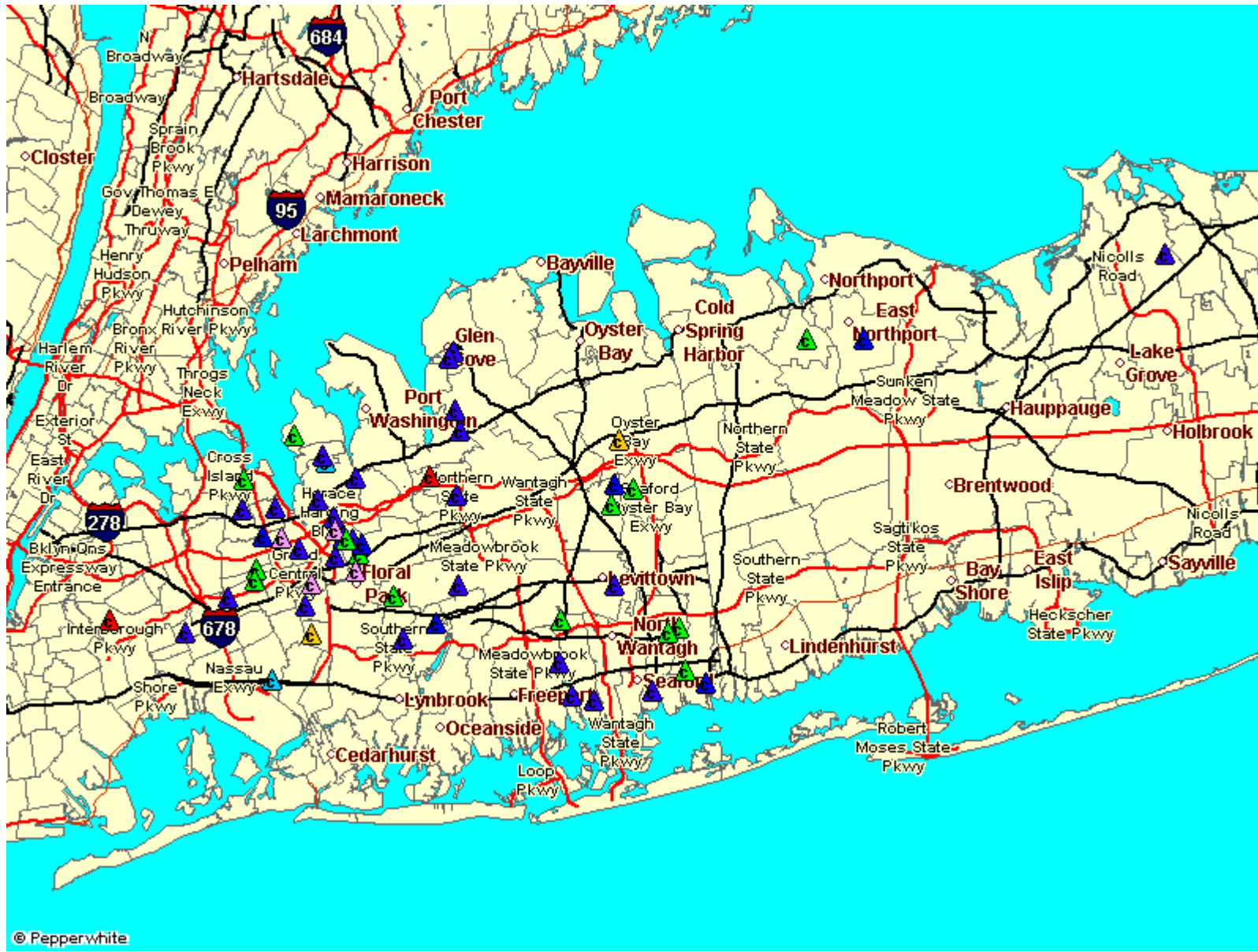
Pie Chart:

By Problem



Map Shot:

Map icons displayed represent active, completed or in queue calls between the hours of 2/14/2007 1:35:17 AM and 2/14/2007 1:35:17 PM that have a valid longitude and latitude associated with it.



Legend:

Calls in queue	Active calls
	<div><div></div> Abdominal Pain</div> <div><div></div> Syncope (Fainting)</div> <div><div></div> Nausea</div> <div><div></div> Headache</div> <div><div></div> Skin Lesion</div> <div><div></div> Vomiting</div> <div><div></div> Coughing</div> <div><div></div> Fever</div> <div><div></div> Difficulty Breathing</div> <div><div></div> Diarrhea</div> <div><div></div> Unconsciousness</div>

Current Calls:

NSLIJ Hospital - Biosurveillance (free-text) Event List

Events displayed represent those between the hours of 2/14/2007 1:35:17 AM and 2/14/2007 1:35:17 PM.









Data and Report from the FirstWatch™ Internet Server

GC	Geo Valid	Date/Time	Event	Visit Indicator	Patient Acct #	Patient Address
	?	2/14/2007 1:37:00 AM	Abdominal Pain		401720	From NShore
	C	2/14/2007 2:23:00 AM	Abdominal Pain		1339855	From NShore
	C	2/14/2007 3:17:00 AM	Abdominal Pain		40164509	From NShore
	C	2/14/2007 6:54:00 AM	Syncope (Fainting)		40164512	From NShore
	C	2/14/2007 7:16:00 AM	Nausea		40016235	From NShore
	C	2/14/2007 7:22:00 AM	Abdominal Pain		40163944	From NShore
	C	2/14/2007 7:27:00 AM	Abdominal Pain		866155	From NShore
	?	2/14/2007 7:33:00 AM	Headache		40152374	From NShore
	C	2/14/2007 7:33:00 AM	Abdominal Pain		40101876	From NShore
	?	2/14/2007 7:33:00 AM	Abdominal Pain		1483926	From NShore
	C	2/14/2007 7:37:00 AM	Headache		40163049	From NShore
	C	2/14/2007 7:54:00 AM	Vomiting		664869	From NShore
	C	2/14/2007 7:54:00 AM	Skin Lesion		1413139	From NShore
	C	2/14/2007 7:58:00 AM	Abdominal Pain		1080081	From NShore

?	2/14/2007 8:03:00 AM	Nausea	40021178	From NShore
?	2/14/2007 8:11:00 AM	Vomiting	40108756	From NShore
C	2/14/2007 8:21:00 AM	Coughing	936912	From NShore
?	2/14/2007 8:22:00 AM	Headache	40105608	From NShore
?	2/14/2007 8:37:00 AM	Syncope (Fainting)	40145199	From NShore
C	2/14/2007 8:43:00 AM	Abdominal Pain	72950	From NShore
C	2/14/2007 8:52:00 AM	Abdominal Pain	1012617	From NShore
C	2/14/2007 8:54:00 AM	Abdominal Pain	178587	From NShore
C	2/14/2007 9:04:00 AM	Abdominal Pain	1359627	From NShore
?	2/14/2007 9:09:00 AM	Respiratory Infection	40158442	From NShore
C	2/14/2007 9:11:00 AM	Abdominal Pain	40081831	From NShore
?	2/14/2007 9:15:00 AM	Vomiting	40160541	From NShore
C	2/14/2007 9:16:00 AM	Abdominal Pain	681494	From NShore
C	2/14/2007 9:25:00 AM	Skin Lesion	40164427	From NShore
C	2/14/2007 9:34:00 AM	Headache	40164531	From NShore
C	2/14/2007 9:35:00 AM	Abdominal Pain	40102075	From NShore

	2/14/2007 9:37:00 AM	Abdominal Pain	40075849	From NShore
	2/14/2007 9:58:00 AM	Headache	1232043	From NShore
	2/14/2007 10:11:00 AM	Abdominal Pain	333860	From NShore
	2/14/2007 10:11:00 AM	Abdominal Pain	1125714	From NShore
	2/14/2007 10:19:00 AM	Vomiting	777077	From NShore
	2/14/2007 10:24:00 AM	Abdominal Pain	40164547	From NShore
	2/14/2007 10:25:00 AM	Abdominal Pain	40164548	From NShore
	2/14/2007 10:26:00 AM	Abdominal Pain	139964	From NShore
	2/14/2007 10:27:00 AM	Abdominal Pain	40081558	From NShore
	2/14/2007 10:27:00 AM	Abdominal Pain	40163655	From NShore
	2/14/2007 10:28:00 AM	Skin Lesion	40164406	From NShore
	2/14/2007 10:36:00 AM	Skin Lesion	40164518	From NShore
	2/14/2007 10:36:00 AM	Abdominal Pain	40130280	From NShore
	2/14/2007 10:41:00 AM	Headache	1480138	From NShore
	2/14/2007 10:44:00 AM	Headache	1108613	From NShore
	2/14/2007 10:46:00 AM	Abdominal Pain	40155300	From NShore
	2/14/2007 10:48:00 AM	Abdominal Pain	40164559	From NShore
	2/14/2007 10:51:00 AM	Abdominal Pain	1523672	From NShore

	2/14/2007 10:54:00 AM	Syncope (Fainting)	1270408	From NShore
	2/14/2007 10:54:00 AM	Coughing	40164483	From NShore
	2/14/2007 11:05:00 AM	Abdominal Pain	40164568	From NShore
	2/14/2007 11:12:00 AM	Fever	40071371	From NShore
	2/14/2007 11:22:00 AM	Abdominal Pain	40164576	From NShore
	2/14/2007 11:37:00 AM	Syncope (Fainting)	40035442	From NShore
	2/14/2007 11:37:00 AM	Syncope (Fainting)	40164581	From NShore
	2/14/2007 11:57:00 AM	Abdominal Pain	40164591	From NShore
	2/14/2007 12:10:00 PM	Vomiting	40164596	From NShore
	2/14/2007 12:10:00 PM	Headache	40164594	From NShore
	2/14/2007 12:13:00 PM	Headache	40164598	From NShore
	2/14/2007 12:14:00 PM	Weakness	88103487	From NShore
	2/14/2007 12:14:00 PM	Diarrhea	40164597	From NShore
	2/14/2007 12:17:00 PM	Headache	88137231	From NShore
	2/14/2007 12:26:00 PM	Fever	40164604	From NShore
	2/14/2007 12:29:00 PM	Difficulty Breathing	40066422	From NShore

	2/14/2007 12:33:00 PM	Difficulty Breathing	884267	From NShore
	2/14/2007 12:36:00 PM	Fever	40164609	From NShore
	2/14/2007 12:39:00 PM	Coughing	1519975	From NShore
	2/14/2007 12:45:00 PM	Diarrhea	1521111	From NShore
	2/14/2007 12:47:00 PM	Headache	1375063	From NShore
	2/14/2007 12:49:00 PM	Headache	1516148	From NShore
	2/14/2007 12:52:00 PM	Abdominal Pain	40152841	From NShore
	2/14/2007 12:57:00 PM	Abdominal Pain	1319073	From NShore
	2/14/2007 1:00:00 PM	Unconsciousness	40164613	From NShore
	2/14/2007 1:07:00 PM	Difficulty Breathing	40164616	From NShore
	2/14/2007 1:16:00 PM	Vomiting	257464	From NShore
	2/14/2007 1:20:00 PM	Syncope (Fainting)	40164619	From NShore
Total Events: 76				